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ABSTRACT

The paper provides a brief discussion of research conducted in child language acquisition at the University of California at Davis in the winter and spring of 1977. The research was directed at children's comprehension of WHY questions. It was an attempt to define when and how children come to understand abstract concepts, such as WHY questions. During the course of the investigation it was discovered that there were some regular patterns characterizing children's answers to difficult WHY questions. When confronted with questions beyond their comprehension, children seem to resort to particular means to disguise their lack of knowledge or to increase their knowledge of specific topics in question. They are sensitive to their role as respondents, and will try to perform in these linguistic exchanges as well as they can (in other words, they will generally try to offer some type of verbal answer). Perhaps children know the limitations of their own comprehension, and they are able to adjust their linguistic activity accordingly (in dialogues). (Author/CLK)

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The Development of Conceptual Understanding - Response Strategies

Hypothesis

The emergence and development of children's "response strategies" during first language acquisition may promote conceptual understanding. Verbal behavior in question/answer situations may actually foster cognitive awareness. Children's response activities indicate that they may have some control over the expansion of their own knowledge through the language medium.

Research

Earlier this year I conducted a research project in child language acquisition. The focus of the research was children's comprehension of WHY questions. It was designed to investigate when and how young children develop an understanding of WHY'S. WHY questions are Wh-questions; they ask for new information[1]. Furthermore, WHY questions usually have no identifiable perceptual correlates or tangible referents[2]. They are concerned with abstract and/or complex relationships. For example, a WHY question may ask about:

Function or purpose
Why does the frying pan have a long handle?

Intention or motivation
Why are the men digging a hole?

Features and conditions of unusual facts or events
Why is the dog sleeping on the chair?

Physical causality
Why did the glass fall off the table?

Unexpected contrasts
Why is that bird yellow?(the other birds are blue)

Social convention
Why do people say "please"?

Rules of safety and practicality
Why do cars stop at red lights?

Personal taste or subjective opinions
Why do you like to go to the beach?

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In order to comprehend and respond to WHY questions appropriately, children must interpret conceptual information. Because of the abstract nature of such interpretations, the comprehension of WHY questions must depend upon verbal communication, rather than perceptual cues. The significance of the relationship between the acquisition of language and the development of conceptual understanding is evident. Linguistic exchanges are necessary for the recognition and appreciation of concepts (e.g. WHY'S).

In the research project, seven subjects were to be studied. The subjects were boys from three to six years of age. During the initial stages of the research, spontaneous speech samples were collected from the children, and each of the subjects' linguistic and intellectual abilities were evaluated. Mean length of utterance(MLU) was calculated for each child, in accordance with Roger Brown's rules(Brown 1973:54). General intelligence(IQ) was determined from each child's scores on the Peabody Picture Vocabulary Test. Mean rank order was then computed by combining the numerical data from these four indices: chronological age, mental age, intelligence quotient, and average length of utterance. This order placed the seven subjects on a relative scale of high to low performance capacities, based on physical maturity, verbal intelligence, and linguistic skills.

Tests of children's comprehension of WHY questions involved a set of ninety WHY questions posed within the context of a standard protocol. During individual sessions with each of the subjects all of these questions were asked during active play or conversations about stories, pictures, games, or selected topics. For example:

while blowing up a balloon,
Why did my balloon get bigger?
while looking at a picture of children roasting marshmallows,
Why do they need those long sticks?
while throwing a ball against a wall,
Why did the ball come back to me?
while talking about breakfast,
Why is it important to eat a good meal in the morning?

All speech was tape recorded and later transcribed. Children's responses to the WHY questions were then coded according to correctness or insufficiency. There were eight response categories:

Fully correct
Brief - short answer
e.g.Why are the bikes going so fast?...Because they're down a hill.
Elaborated - detailed explanation
e.g.Why don't dogs ride bikes?...Because they might not know how to do things like that, and they might hurt themselves.

Partially correct
Associational - meaningful association established between lexical items in the question and the response
e.g.Why do people go to school?...Because they need some homework.
Situational - relevant contextual connection expressed in the response to a particular question(recognition of the situation)
e.g.Why did they take their shoes off in the garden?... So they can water the plants.

Ambiguous/vague
Impossible to determine correctness of the answer
e.g.Why don't those kegs fit together?...Because that's how it belongs.

Incorrect
Wrong, irrelevant, or illogical answer
e.g.Why is that boy wearing a blindfold?...Because that's how old he is.

"I don't know"
Ignorance of answer admitted or unwillingness to answer expressed

No response
No verbal reply offered

After all responses had been coded, percentages of correct vs. insufficient answers were calculated[3]. These figures illustrate how well each of the subjects understood the WHY questions asked during the testing sessions. As expected, children ranked higher on the scale(mean rank order according to CA, MA, IQ, and MLU)provided greater percentages of correct responses than children ranked lower on the scale.

TABLE I

Correct Responses Provided

Subjects	% Correct Responses
1	19
2	39
3	42
4	54
5	52
6	87
7	97

There was a significant increase in the number of correct responses provided by the older, more advanced children. The foundations of conceptual understanding seem to be mastered within a two-to-three-year period.

Tapes of the testing sessions revealed interesting information related to the insufficient responses. Whenever the subjects experienced problems interpreting the WHY questions, they made use of regular routines, phrases, or verbal reactions. In fact, all of the subjects made use of very similar types of responses in these situations. Certain underlying strategies seemed to exert some control over their expression of answers to difficult WHY questions. Apparently, the children were aware of just how much they knew about the world, and they were sensitive to the limitations of their own understanding. When confronted with questions they could not answer readily, they responded in ways which compensated for their lack of knowledge. These "response strategies" served several different functions:

- to further knowledge by gaining access to additional information about a topic in question,
- to alter the focus of a discussion to a more familiar topic, or
- to end a particular conversation.

It was noted that all subjects were fully aware of their roles as respondents to questions in dialogue. For all the children tested, instances of "no response" totalled only 5% of answers to WHY questions in the protocol. Most of these failures to respond verbally were the result of distractions, rather than the children's refusals to reply. In other words, the subjects

knew that they were expected to offer verbal replies. When they could not formulate reasonably correct answers to questions, they relied upon "response strategies". Four basic strategies were discovered in this study.

1. Avoid a specific question, but maintain conversation.
   Accomplished by:
   a. Focusing on a new topic(perhaps unrelated to the original topic)
      e.g.Why would you rather eat dinner with your parents?... Because I like hearing records.
   b. Generating new questions in response to the original question
      "echo" e.g.Why are they spraying water on the flowers?... Why are they doing that?
      "spontaneous"e.g.Why are the children wearing those funny hats?...Which one is that hat?
2. Terminate discussions of a specific question.
   Accomplished by:
   a. Using special expressions, such as "because" or "just because".
   b. Attaching phrases onto the ends of utterances, such as "that's why" or "that's all".
   c. Answering with nonsense words, such as "because bun!".
   d. Answering emphatically with brief comments
      e.g.Why are they laughing?(in a picture)...I don't want to finish it!(the book).
3. Dismiss discussion of a specific question.
   Accomplished by:
   a. Saying "I don't know" in an emphatic manner
4. Admit lack of knowledge
   Accomplished by:
   a. Saying "I don't know"(without marked stress or emphasis).

Strategy number four is an appropriate response in an adult grammar of English. All the others are designed to disguise the children's ignorance or incompetencies in answering the WHY questions.

Data

Data provides evidence in support of the gradual development of these response strategies. In this study, the younger, less advanced children used a greater number and variety of the response strategies. The older, more advanced children were able to answer a greater number of the WHY questions correctly, and therefore, they had less need for the response strategies.

They restricted their use of strategies one through three and increased their use of strategy number four.

TABLE II

Usage of Response Strategies

Subjects	% of Answers with Response Strategies				
	I	II	III	I,II,III	IV
1	15	65	4	84	16
2	13	27	18	58	42
3	51	7	10	68	32
4	28	9	16	53	47
5	12	19	2	33	67
6	19	31	0	50	50
7	0	0	0	0	100

TABLE III

Reliance upon Response Strategies

Subjects	Total % of Response Strategies Used
1	61
2	50
3	46
4	36
5	47
6	18
7	1

This illustrates that individual children may use these response strategies as needed, depending upon their level of language proficiency and conceptual understanding. As they grow older, their knowledge of the world expands, cognition becomes more acute, and language conforms more closely to the rules prescribed in an adult grammar.

Conclusion

The results of the research indicate that children's responses to difficult questions are designed to maximize the efficiency of the communicative situation. Children seem to take an active part in the language development process, and they may even monitor their own progress. When their own lack of knowledge impedes comprehension of questions or expression of appropriate answers, they call upon compensatory ways to handle conversational exchanges. These "response strategies" may actually promote understanding of the questions posed. Special types of responses may be attempts to maintain verbal contact, to obtain more information, and/or to avoid certain topics, while minimizing

exposure of children's ignorance or inabilities to interpret questions correctly.I contend that children do not react to questions which may be beyond their comprehension(e.g.WHY'S) in a haphazard manner. They make use of "response strategies" in order to perform more effectively in question/answer situations.

Implications

The suggested theory of "response strategies" highlights the interdependent relationship of language and cognition. Children's linguistic performance in this research reflected their comprehension of abstract concepts(e.g.WHY'S), but it also represented their capacity to influence and control the nature and direction of conversational exchanges. Apparently, children seem to play an extremely important part in the language acquisition process. They seem to exercise a certain amount of subtle control in the development of both linguistic skills and conceptual knowledge. Further investigation and field work related to the existence, operation, and significance of similar strategies in other aspects of language learning might substantiate the hypothesis that children are aware of their own role in the mastery of a linguistic system.

Notes

1. Yes/No questions simply ask for confirmation/disconfirmation of information.
2. WHO or WHAT questions(also Wh-questions) often refer to visually identifiable subjects or objects.
3. Correct responses = Fully correct or Partially correct. Insufficient responses = Ambiguous, Incorrect, "I don't know", or No response.

References

Brown, Roger. A First Language: The Early Stages. Cambridge, Mass.: Harvard University Press, 1973.